

**A RADIO TELECOMMUNICATIONS SYSTEM OPERATIVE BY
INTERACTIVE DETERMINATION OF SOFT ESTIMATES, AND A
CORRESPONDING METHOD**

ABSTRACT

A radio telecommunications system is provided operative to
5 communicate digital data symbols with higher than quadrature phase shift
keying (QPSK) modulation. The system comprises a transmitter (1) and a
receiver (2). The transmitter (1) comprises a modulator (d) and means (a, b, c,
□) to split and encode the data into a first block of more significant bits of
symbols and a second block of less significant bits of the symbols for
10 modulating by the modulator (d). The receiver (2) is operative to receive
digital data bits by iterative determination of soft estimates of bits followed by
a hard decision as to what bit was intended. The receiver (2) comprises a first
processor (3) operative to provide first soft estimates of bits of the received
signal, and a second processor (13) operative to decode the first soft estimates
15 and to provide second soft estimates of the bits. The receiver (2) also
comprises a first combiner (11') operative to provide adapted first soft
estimates to the second processor (13), the adapted first soft estimates of each
bit being dependent upon the respective first soft estimate and a respective
previous first soft estimate. The receiver (2) also comprises a second combiner
20 (17) operative to provide third soft estimates back to the first processor for
subsequent further decoding, the third soft estimates of each bit being
dependent upon the respective second soft estimate and a respective previous
second soft estimate.